

## UVIKON XL SPECTROPHOTOMETER

### Support and service has been provided in the past by:

Research Instruments International

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### Hardware Info

#### Lamps:

As of 4/2010, we have spare lamps for the Uvikon XL. They are in the cabinet directly below and to the right of the Uvikon XL.

Uvikon XL (CSA-style) (new spec)

- |                                   |          |       |
|-----------------------------------|----------|-------|
| • Deuterium lamp (UV)             | 96-90297 | \$535 |
| • Tungsten Halogen lamp (Visible) | 96-90275 | \$95  |

#### Other equipment and manuals:

Kept in the cabinet below and to the right of the Uvikon XL. Note that our prior spectrophotometer (“old Uvikon”) was a Uvikon 9310, and there are some spare parts from that spectrophotometer in the cabinet, so check labels. Some parts from the Uvikon 9310 are interchangeable with the Uvikon XL.

### Lamp failure

Typical lamp lifetimes can extend several thousand hours. Lamp failure is usually accompanied by an error message on the display, but this is not always the case.

### Cleaning clogged cell blocks

- 6 cuvette cell blocks are attached in parallel
- Do not push water through the system – this can make the clog worse and damage plumbing
- Attach a syringe and pull gently to attempt to draw clog out
  - Place other end in water
  - If this fails, draw dilute Lime-away through system
    - Try 1:50 first, go no higher than 1:20 dilution
    - Do not let high or low pH solutions sit in cell blocks for more than 5 min
  - Other things to try: dilute HOAc or HOCl
    - Try 5-20% HOAc
    - 10% bleach or clorox to break up algae
  - After high/low pH solution, draw water through system until pH neutral

- If necessary to remove cell changer
  - See UVIKON\_cell\_changer\_installation.pdf for manufacturers instructions on removing the base plate, then follow instructions below to disassemble cell block.
  - Turn power off, unplug spec before removing cell changer and make sure you are grounded before touching electronic components to avoid shorting the instrument
  - Be **very** careful with ribbon cable, note correct orientation before removing
    - Uvikon XL: red strip goes up
    - Uvikon 9310: red strip goes down
  - Never lift by blocks – only from heavy baseplate
  - To disassemble cell block apparatus:
    - Uvikon will recommend against doing this because:
      - It is difficult to reassemble and ensure that all connections are sealed
      - You may perturb the alignment of the cell blocks
    - We have done this successfully several times anyway
    - Note carefully position on rotator shaft so that it can be aligned correctly when reassembled
    - Unscrew components, remove cell block base plate
      - Clean out hollow screws, attachment blocks, and cell block itself (depending on location of blockage)
      - If cell block itself is clogged, try sonicating in bath sonicator (>10 minutes) and soaking in up to 5% acetic acid (for a few hours)
        - Soaking in acidic solution for long periods of time can degrade glues and seals – be careful and only do this if absolutely necessary.
    - Reattach cell block to water circulation lines and test water flow. Then turn circulation off, dry connections and apply silicone sealant to all washers at connections, Allow to cure for 24 hours. Check water flow again and then put cell block back on rotator shaft and put base plate back in spec.
- To avoid clogs, regularly clean out water bath
  - Avoid topping off bath with water, will slowly increase ionic strength of water in bath
  - Use antifreeze/coolant to prevent evaporation and necessity to top off.
- If none of this works, send to Uvikon for refurbishment
  - Remove cell changer and ship (cheaper than field engineer)

## **Vendors and Supplies**

### **Absorbance Spectrophotometry**

#### Spectrophotometers

- Research Instruments International

#### Cuvettes: semi-micro cells for 1 ml reactions

- Hellma
  - Catalog #114, QS 10 mm 1400 ul, clear walls
  - \$175, (includes stopper)

- Agilent
  - 5063-6561, QS 10 mm 1400 ul, black walls
  - \$283 (includes stopper)
- Starna Cells
  - Spectrosil Far UV Quartz window (170-2700 nm)
  - 10 mm, 1400 ul
  - \$135 (with stopper, clear walls), 29-Q-10
  - \$219 (with stopper, black walls), 29B-Q-10
  - 5% off orders of 4-7, 10% off orders of 8 or more
- Uvonic Instruments 516-576-2004
- note: black cells reduce stray light from walls

Current inventory of semi micro cuvettes:

- Old clear set: Uvonics (possibly manufactured by Starna)
- Black set: Agilent (likely manufactured by Hellma)
- Two new clear sets from Starna

Starna and Hellma are well-known, high quality manufacturers.

Cuvette racks: Sigma R2633 \$17.50

### **Service from Research Instruments International:**

#### **On-site service:**

Travel to site is \$165/hour. Estimate 5-6 hours from San Diego

Service on-site is \$250/hour.

#### **Depot service:**

Shipping to san diego is estimated \$400 roundtrip per instrument. We have a crate for the new spec. 2-3 days estimated time for shipping. Depot service is slightly cheaper.

### **Software Information:**

Use the LabPower Jr software. There have been timing issues with the other software. Be wary of the instrument-reported time. For important kinetics, use a timer and keep your own time for the run to verify.

Time delay on Uvikon XL:

<b>Date</b>	<b>Sampler</b>	<b># samples</b>	<b>Total Run</b>	<b>Real Time</b>	<b>Machine Time</b>	<b>Ratio</b>
11/28/07	6S/1R	6	80	110	106.75	1.03
11/30/07	6S/1R	6	150	78	73	1.07
11/30/07	10S/2R	10	50	32.5	31.5	1.03
11/3-/07	10S/2R	10	50	25.75	25	1.03